



SELF-HELP: CLINICIAN SECTION

Self-treatment advice and the McKenzie approach for back trouble[☆]

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Introduction

Modern management principles for a back pain rest on the evidence that simple, reactivation advice is the gold standard. There are many treatment methods which have been shown to reduce pain. However, for prevention of disability or treatment of chronic pain, exercise is the proven benchmark. Therefore, as soon as possible self-treatment with exercise should be recommended.

Most patients seeking health care for a back problem either have severe pain, are getting worse, or are just not improving (Carey et al., 2000). Patients want to know (Turner, 1996):

- What is causing my pain?
- How long will it last?
- What can you do for me?
- What do I have to do?

The modern approach to managing spine problems involves reassurance and reactivation. Most back problems are simple, uncomplicated mechanical disorders (Waddell, 1998). Once diagnostic triage has been performed to rule out serious causes such as tumor, infection, or fracture (<1%) or nerve root compression (<10%) (Waddell, 1998) the patient should be reassured that the prognosis

for speedy recovery is excellent (Waddell, 1998; Deyo and Weinstein, 2001).

The relationship between psychosocial factors and disabling beliefs

Patients who worry about their functional status or fear their pain are more likely to develop chronic problems (Pincus et al., 2000; Thomas et al., 1999). They are particularly vulnerable to being “labeled” with an injured back (i.e. ruptured disc) or degenerative condition (Bogduk, 2000; Deyo, 2001). Patients who expect an activity to be painful or disabling are less likely to perform at a normal level (Al-Obaidi et al., 2000; Lackner et al., 1996; Lackner and Carosella, 1999). Thus, one’s performance is limited by psychological as well as physical factors. Stress, muscle tension and pain are interrelated (Main and Watson, 1999; Mense and Simons, 2001). It is the clinician’s role to inform the patient that fear and/or stress increases muscle tension which in turn can exacerbate pain (Indahl et al., 1995). Insight into this relationship helps to reassure patients that their pain is largely due to factors which are potentially controllable.

Rest, inactivity or overly “guarded” movements are deleterious to the recovery of activity tolerance. Conversely, reassurance that the spine is not injured or damaged and that gradual reactivation will actually speed recovery is necessary to dispel

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the patient's disabling feelings and cognitions (i.e. worry, anxiety and fear) (Indahl et al., 1995, 1998; Von Korff et al., 1998).

Vlaeyen and Morley (2004) have reported that another psychologic make-up at the opposite end of the spectrum from fear-avoidance is the "weekend warrior" or "boom or bust" mentality. They may have difficulty with pacing, resulting in unsuccessful rest/activity cycles. Such individuals will perform as much as they can, of an activity, to bring it to completion or achieve a goal. This is a risky cognitive-behavioral approach that creates undue repetitive strain.

Evidence for simple, reactivation advice

Information and advice emphasizing the value of fitness and the safety of resuming activities achieves superior outcomes to advice that reinforces rest, activity restrictions and the notion that the spine is injured or damaged (arthritis, herniated disc) (Burton and Waddell, 1999). Reassuring workers and encouraging resumption of ordinary activities is superior to medication, bed rest or mobilization exercises (Malmivaara et al., 1995). Little et al. (2001) demonstrated that educational advice which encourages early exercise (not just advice to stay active) or endorsement by a physician of a self-management booklet, has been shown to increase patient satisfaction and function while reducing pain. Interestingly, if simple advice to perform exercise is paired with a take home booklet about the benefits of activity this combination proved less effective than either intervention by itself. This is believed to be due to the fact that the written and verbal information presented was not sufficiently consistent (Burton and Waddell, 2002).

Two studies found that either lay-led or professional-led instruction in self care and worry reduction were both successful in reducing back-related worry, fear-avoidance beliefs, pain severity and activity intolerances (Moore et al., 2000; Vlaeyen et al., 2001). A long term follow-up study led by Indahl focused on education designed to reduce fear (Indahl et al., 1995, 1998). Patients were informed that light activity would not injure the disc, but instead could speed recovery. The return to work rate was double the control group. Hagen reported at 1 year follow-up that light activity, education about the benign nature of pain, and encouragement to stay active achieved a significantly greater return to work rate than those who received more traditional management (Hagen

et al., 2000). These studies utilized graded exposures which means that patients exercise included movements which were perceived as threatening by the patient.

Lorig showed that a 6 week lay-led self-management program for rheumatoid and osteo arthritits had good follow up data 4 years later (Lorig et al., 1993). Von Korff et al. (1998) modeled this program for the low back with similar, positive results. Lorig and Holman (1993) used self-management for pain control in arthritic patients and found that it decreased pain and reduced the use of medical services by 43%.

Evidence for the McKenzie system

One of the most practiced and studied methods of self-treatment with exercise is the McKenzie approach. This approach utilizes repeated end-range of motion tests (up to 10 repetitions) to identify the movement direction which centralizes leg symptoms into the low back (centralization phenomenon—see Box 1 below) (see Figs. 1 and 2). Once the patient's therapeutic movement direction is determined, then exercises are taught to the patient incorporating that directional preference or movement "bias".

It has been shown to be a promising system (Fritz et al., 2000; Kilpikoski et al., 2002; Razmjou et al., 2000). Kilpikoski et al. (2002) demonstrated that classification of 39 chronic LBP patients into the specific McKenzie syndromes (posture, dysfunction, and derangement—see Box 2 below) was possible with 95% agreement ($k = 0.6$; $P < 0.000$). However, a limitation of the study was that most patients (35 out of 39) were classified into one syndrome—the derangement syndrome.

Box 1

The centralization phenomenon

In a patient with sciatica (referred symptoms in the leg coming from the spinal S1 nerve root) movements or positions should be explored in the hope of finding those which "centralize" symptoms towards the low back. Such symptom centralization is a good prognostic sign. Those movements or positions which centralize peripheral symptoms should be prescribed as self-treatment.



Figure 1 Repeated trunk flexion (measurement not necessary).



Figure 2 Repeated trunk extension.

Box 2

McKenzie syndromes

Posture

- History of static mechanical sensitivity
- No movement bias—Negative exam

Dysfunction

- Movement bias
- Pain with end-range loading that is eliminated when stretch removed

Derangement

- Movement bias
- Pain with mid or end-range loading that persists after loading removed

Having such a homogenous sample can over-inflate the kappa value. This study utilized two highly trained individuals. Another study which utilized an abbreviated training program did not show acceptable interexaminer reliability (Riddle and Rothstein, 1993). Previous work has also demonstrated the validity of the centralization phenomenon (Fritz et al., 2000; Razmjou et al., 2000).

Evidence that customizing exercises to the unique functional needs of the patient enhances outcomes was shown by researchers studying the McKenzie approach (Stankovic and Johnell, 1990). This study had certain methodological flaws which weakened its conclusions, but the value of customization is not minimized.

In a large, randomized controlled clinical trial Timm (1994) showed that exercise was superior to passive care in treating failed back surgery patients. In this study a further comparison of exercise types showed that low-tech exercise (McKenzie and stabilization) was superior to high-technology exercise (isotonics & Cybex).

The McKenzie method was shown to be as effective as an isotonic strengthening program in a recent randomized, controlled trial of subacute and chronic patients (pain duration of at least 8 weeks) (Petersen et al., 2002). The course of treatment was 8 weeks of supervised training. McKenzie was superior at a 2 month follow-up, but no differences were noted at 8 month follow-up.

Clinical application

Simple steps for encouraging self-treatment in a patient include *reassurance* of the benign nature of the problem and positive prognosis; *history* of functional limitations; *examination* of functional deficits; *self-treatment skills training* to close the gap between functional deficits and limitations; and *audit* with simple, measurable outcomes of patient's mechanical sensitivities, functional limitations and deficits.

Self-treatment approaches are very potent in clinical practice, but a clear strategy to enhance patient motivation is crucial to success. According to Bandura (2004) health promotion should begin with goals, not means. For back pain patients, mutually agreed upon goals focus on reducing pain-related activity intolerances (e.g. sitting, standing, walking, bending, etc.).

Social cognitive theory specifies a set of core determinants (Bandura, 2004) to enhance patient motivation to pursue self-treatment as the most efficacious means to achieve a reduction in pain-related activity intolerances. For example, knowledge of health risks and benefits of health practices/behaviors such as that prolonged rest slows recovery and that gradual reactivation speeds recovery. Another core determinant involves anchoring to outcome expectations about costs/benefits of different health habits such as that mechanical sensitivities like pain with forward bending should improve quickly following self-treatment and worsen following prolonged sitting.

What follows are two examples of how self-treatment advice, including McKenzie treatments, can be recommended to a patient.

Example 1

Chief complaint: Acute sciatica that is worsening over a 3 day period

Functional goal: improve activity intolerances involving sitting, driving, walking, and forward bending

Mechanical sensitivity: typical pain reproduced with straight leg raise test, trunk lateral flexion to the same side as symptoms, and trunk flexion

Exercise prescription: avoidance of prolonged sitting, micro-breaks involving upright postures (e.g. Brugger relief position), McKenzie standing pelvic side shift manoeuvre, extension exercises (e.g. sphinx, cobra & standing back extension), simple stability

training (e.g. quadruped leg reach), basic functional training (e.g. hip hinge).

Audit: activity intolerances and mechanical sensitivities

Example 2

Chief complaint: 2 weeks of low back pain that is not improving

Functional goal: improve activity intolerances involving prolonged sitting and forward bending

Mechanical sensitivity: typical pain reproduced with trunk flexion

Exercise prescription: avoidance of prolonged sitting, micro-breaks involving upright postures (e.g. Brugger relief position), simple stability training (e.g. side bridge, quadruped leg reach), basic functional training (e.g. hip hinge, squat/lunge).

Audit: activity intolerances and mechanical sensitivities

Summary

Self-treatment advice based on assessment of a patient's mechanical sensitivities and abnormal motor control is the key reactivation treatment. Manual therapy, manipulation, medication, and other modalities may be catalysts of recovery, but motivating a patient to participate in their care through self-treatment is the goal. To motivate the patient always explain the risks from lack of involvement and the benefits from active self-treatment. Also, use outcomes to audit the patient's progress with the self-care program. It is not so hard to change patient's belief systems and behavior, but it is sometimes very hard to change these in health care providers.

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